

(d) a cloned polynucleotide of interest linked to a first inducible promoter,

wherein in said gene expression system, the expression product of the IF gene, or functional analogue thereof

(i) induces the production of bacteriocins by a lactic acid bacterium,

(ii) is not a lantibiotic, and

(iii) induces the expression of genes regulating bacteriocin production in said lactic acid bacterium, and

(iv) activates the expression product of the SakK gene, or functional analogue thereof, and

the activated expression product of the SakK gene, or functional analogue thereof, activates the expression product of the SakR gene, or functional analogue thereof, and

the activated expression product of the SakR gene, or functional analogue thereof, induces the first inducible promoter of the gene of interest,

thereby causing expression of the gene of interest; and wherein the IF gene or functional analogue thereof is expressed from a promoter different from the promoter from which the SakK gene or functional analogue thereof and/or the SakR gene or functional analogue thereof are expressed; and

wherein the first inducible promoter comprises two repeated nucleotide sequences 5 to 10 nucleotides long and spaced 17 to

23 nucleotides apart, wherein the downstream member of said repeated sequence is located 30 to 38 nucleotides upstream from a -10 region of a bacterial gene, and wherein said repeated nucleotide sequences are selected from the group consisting of residues 7-14 and 30-38 of SEQ ID NO:6, residues 7-14 and 30-38 of SEQ ID NO:7, residues 7-14 and 30-38 of SEQ ID NO:8, residues 7-14 and 31-38 of SEQ ID NO:9, and residues 7-8, 10-14 and 31-38 of SEQ ID NO:10.

70. (amended) A gene expression system comprising:

- (a) an IF gene;
- (b) a SakK gene;
- (c) a SakR gene;

(d) a cloned polynucleotide of interest linked to a first inducible promoter,

wherein in said gene expression system, the expression product of the IF gene activates the expression product of the SakK gene, and

the activated expression product of the SakK gene activates the expression product of the SakR gene and

the activated expression product of the SakR gene induces the first inducible promoter of the gene of interest,

thereby causing expression of the gene of interest;

wherein said the expression product of said IF gene is not a  
lantibiotic; and

wherein the IF gene is expressed from a promoter different from  
the promoter from which the SakK gene and/or the SakR gene are  
expressed; and

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wherein the first inducible promoter comprises two repeated  
nucleotide sequences 5 to 10 nucleotides long and spaced 17 to  
23 nucleotides apart, wherein the downstream member of said  
repeated sequence is located 30 to 38 nucleotides upstream from  
a -10 region of a bacterial gene, and wherein said repeated  
nucleotide sequences are selected from the group consisting of  
residues 7-14 and 30-38 of SEQ ID NO:6, residues 7-14 and 30-38  
of SEQ ID NO:7, residues 7-14 and 30-38 of SEQ ID NO:8, residues  
7-14 and 31-38 of SEQ ID NO:9, and residues 7-8, 10-14 and 31-  
38 of SEQ ID NO:10.

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107. (amended) An isolated nucleic acid comprising:

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two repeated nucleotide sequences 5 to 10 nucleotides long  
and spaced 17 to 23 nucleotides apart, wherein the downstream  
member of said repeated sequence is located 30 to 38 nucleotides  
upstream from a

-10 region of a bacterial gene,

wherein transcription of a coding nucleic acid sequence  
operatively linked to said isolated nucleic acid is activated by

an expression product of a SakR gene or functional analog thereof that has been activated by an expression product of a SakK gene or functional analog thereof, wherein said repeated nucleotide sequences are selected from the group consisting of residues 7-14 and 30-38 of SEQ ID NO:6, residues 7-14 and 30-38 of SEQ ID NO:7, residues 7-14 and 30-38 of SEQ ID NO:8, residues 7-14 and 31-38 of SEQ ID NO:9, residues 7-8, 10-14 and 31-38 of SEQ ID NO:10.

Please add the following new claims:

--109. (new) A vector comprising an inducible promoter (I) that comprises two repeated nucleotide spaced 17 to 23 nucleotides apart and selected from the group consisting of residues 7-14 and 30-38 of SEQ ID NO:6, residues 7-14 and 30-38 of SEQ ID NO:7, residues 7-14 and 30-38 of SEQ ID NO:8, residues 7-14 and 31-38 of SEQ ID NO:9, residues 7-8, 10-14 and 31-38 of SEQ ID NO:10;

operatively linked to a multiple cloning site for inserting a polynucleotide of interest so that the inducible promoter (I) controls transcription of an inserted polynucleotide of interest.

110. (new) The vector of claim 109, wherein the polynucleotide of interest encodes a polypeptide having proteolytic activity, carbohydrolytic activity or autolytic activity.

111. (new) A gene expression system comprising the vector of claim 109 and further comprising a *Lactobacillus* host cell.

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112. (new) A gene expression system comprising the vector of claim 109 and further comprising a polynucleotide encoding an IF peptide of a *Lactobacillus* species, a polynucleotide encoding a SakK protein of a *Lactobacillus* species and a polynucleotide encoding a SakR protein of a *Lactobacillus* species.

113. (new) The gene expression system of claim 112 in which at least one of the polynucleotide encoding an IF peptide of a *Lactobacillus* species, the polynucleotide encoding a SakK protein of a *Lactobacillus* species and the polynucleotide encoding a SakR protein of a *Lactobacillus* species are present on at least a second vector separate from the vector comprising the inducible promoter (I).

114. (new) The gene expression system of claim 111, wherein the *Lactobacillus* host cell comprises

- (a) an IF gene;
- (b) a SakK gene; and
- (c) a SakR gene;

wherein in said gene expression system, the expression product of the IF gene activates the expression product of the SakK gene, and

the activated expression product of the SakK gene activates the expression product of the SakR gene and

the activated expression product of the SakR gene induces the inducible promoter of the vector,

thereby causing expression of the gene of interest;

wherein the expression product of said IF gene is not a lantibiotic; and

wherein the IF gene is expressed from a promoter different from the promoter from which the SakK gene and/or the SakR gene are expressed.

115. (new) The gene expression system of claim 112, wherein the SakK gene and the SakR gene are operably linked to a constitutive promoter.

116. (new) The gene expression system of claim 112, wherein the inducible promoter (I) and gene of interest are on a first vector and the SakK gene and the SakR gene are operably linked

to a constitutive promoter located on a second vector separate from the first vector.

117. (new) The gene expression system of claim 112, wherein the SakK gene and the SakR gene are operably linked to a second inducible promoter.

118. (new) The gene expression system of claim 112, wherein the inducible promoter (I) and gene of interest are on a first vector and the SakK gene and the SakR gene are operably linked to a second inducible promoter located on a second vector.

119. (new) The gene expression system of claim 112, wherein the expression product of the IF gene has the amino acid sequence of residues 19-37 of SEQ ID NO:3.

120. (new) A kit comprising the vector of claim 109 and a peptide comprising the amino acid sequence of residues 19-37 of SEQ ID NO:3.

121. (new) The kit of claim 120, further comprising a *Lactobacillus* host cell.

122. (new) A kit comprising the vector of claim 109 and a second vector comprising a polynucleotide encoding a peptide comprising the amino acid sequence of residues 19-37 of SEQ ID NO:3.

123. (new) The kit of claim 122, further comprising a *Lactobacillus* host cell.

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124. (new) The gene expression system of claim 69, in which the functional analog of the IF gene, the functional analog of the SakK gene and the functional analog of the SakR gene are all obtained from a *Lactobacillus* species.

125. (new) A gene expression system comprising:

(a) a polypeptide comprising the amino acid sequence of SEQ ID NO: 3 or encoding residues 19-37 of SEQ ID NO:3;

(b) a gene encoding a histidine kinase protein of a *Lactobacillus* species, said histidine kinase being capable of being activated by the polypeptide (a);

(c) a gene encoding a response regulator protein of a *Lactobacillus* species, said response regulator protein being capable of being activated by the histidine kinase (b); and

(d) a cloned polynucleotide of interest linked to a first inducible promoter, wherein the first inducible promoter



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comprises two repeated nucleotide sequences 5 to 10 nucleotides long and spaced 17 to 23 nucleotides apart, wherein the downstream member of said repeated sequence is located 30 to 38 nucleotides upstream from a -10 region of a bacterial gene, and wherein said repeated nucleotide sequences are selected from the group consisting of residues 7-14 and 30-38 of SEQ ID NO:6, residues 7-14 and 30-38 of SEQ ID NO:7, residues 7-14 and 30-38 of SEQ ID NO:8, residues 7-14 and 31-38 of SEQ ID NO:9, and residues 7-8, 10-14 and 31-38 of SEQ ID NO:10.--

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